

**Clubhouse Academic Programming:
Exploring a Middle School Math Program at the
Redwood City Clubhouse**

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I. Executive Summary

The Boys and Girls Clubs of the Peninsula (BGCP) are currently exploring additional academic support programs for youth at the BGCP's clubhouses. In order to discover what types of academic programming would be most beneficial for the students at these clubhouses, the BGCP partnered with Stanford University's School of Education to research characteristics of effective academic programming.

Introduction

As the breadth of this research had the potential to limit its depth, the researchers elected to focus solely on the Boys and Girls Club of the Peninsula Redwood City (BGCP – RWC) location and to tailor this study to the most pressing needs for academic programming. From conducting initial research on-site in Redwood City to determine the greatest opportunities for growth, the research team observed that there was less academic programming for middle school students and that staff and youth felt that they needed more help in math than other subjects. Subsequent research was thus focused on potential math programming for middle school students at this location. While these findings only apply directly to math programming for middle school students at the Redwood City location, the researchers believe that some of their conclusions may be generalized to other academic areas and BGCP clubhouse locations, but less so to other age groups.

Literature Review

The existing literature relevant to this study emphasizes a number of points. First, American attention to math has increased significantly over the last couple of decades since research began to show American students falling behind their international counterparts. Second, middle school is a critical time for youth development. At this time, youth begin struggling more with academics, especially math, making math interventions during this time crucial. Third, high quality, properly trained, and caring staff are necessary for academic programming in an after-school context. Fourth, maintaining a physically and psychologically safe and intentional after-school learning environment is essential. Last, math curricula for middle school students in an after-school context must focus on maintaining student engagement. Student voice and choice in participation, project learning, games, and group work are some of the most salient tactics that help to encourage engagement.

Methodology

Apart from this literature review, the researchers gathered qualitative data through observations, focus groups, and staff interviews. Researchers observed the general environment of the BGCP's Redwood City clubhouse on multiple occasions, and also observed one session of math programming to better understand the environment for

future programs and to observe the pedagogical style of the instructor. However, this program was only for first- through third-grade students and thus the data collected from this observation were not used in formulating specific curricular recommendations for middle school students. The two separate focus groups consisted of eight middle school students each from the Redwood City Clubhouse. The interviews involved a number of staff members from the same location as well as a representative from the Boys and Girls Clubs of America.

Findings

What were possibly the most surprising, and heartening, findings of this study were students' perceptions of the importance of math and school performance. While conventional wisdom, the media, and even some researchers depict students of this demographic as troubled, unmotivated, and apathetic towards school, the students that spoke with the researchers hardly fit this mold. They repeatedly articulated the value of school and the importance of strong performance in math, and stated that they were willing to participate in more academic programming on-site at the BGCP-RWC. However, the findings of the focus groups did affirm the notion that academic programs in the context of community-based organizations should be substantially different than traditional school programming. The students expressed their desire for fun and engaging programs, such as projects and games, and space where they could collaborate and build on each other's knowledge and skills. Students also stressed the importance of caring and high-quality staff in academic programming.

BGCP staff interviewed by the researchers also cited the importance of fun and engaging activities for this age group. Staff mentioned games, projects, and hands-on activities as some of the most useful tactics in increasing student engagement. These opinions were consistent with the literature, as well as with general student responses. Staff also noted a lack of academic programming for this age cohort and added that additional academic programming and a renewed emphasis on subject skills would be highly beneficial to the middle school students at the BGCP-RWC.

Opportunities for Growth

After conducting the qualitative research on-site at the BGCP and the broader literature review, the research team believes there is the potential for strong and rewarding results through additional academic programming for middle school students, particularly in math. Additionally, the researchers believe that an intentional learning environment strictly designated for this age group, high quality and caring staff, and an engaging curriculum are important elements for the success of this program.

II. Introduction

Youth in disadvantaged communities and neighborhoods lack many social services common to suburban and middle-class neighborhoods and are often at increased danger

for a number of social and behavioral risks, such as violence and gang involvement, teen pregnancy, and drug and alcohol use among others (Gutman & Midgley, 2000). Because of this, the BGCP, with clubhouses located in a number of historically disadvantaged neighborhoods in the San Francisco Bay Area, have traditionally focused on social and developmental factors of youth. However, as the current movement toward standardized testing and academic measurement is further revealing the alarming achievement gap between different student populations, and as schools are struggling to close this gap, community-based organizations and other groups such as the BGCP are increasingly being called upon to provide academic services to underserved students.

Dr. Erica Stevens, Director of Education Programs for the Boys and Girls Clubs of America (BGCA), stated that in 2007 the BGCA developed a new strategic five-year plan aimed at supporting students' academic performance and promoting high school graduation. Since the release of the BGCA's new strategic plan, the BGCP have followed their lead and looked for ways to improve the academic support they offer their youth.

As the BGCP already provide an array of academic supports to their student population, the researchers wanted to first assess the current state of academic programming being offered at the BGCP in order to deduce the most pressing opportunities for expanding academic services.

Scope of Research

The researchers first decided to focus on one BGCP location alone, as they believed the needs of the students and capacities of the clubhouses differ from location to location, thus making specific recommendations more useful for the BGCP. From the recommendations of a number of BGCP's senior staff members, the researchers elected to focus only on the BGCP's Redwood City location. They then looked at what the BGCP is currently offering at this location in regards to academic programs, what is not yet being offered, and what students and staff desire to see implemented.

After a brief analysis, the researchers discovered a dearth of academic programming specifically aimed at middle school students. Academic programs in a variety of subject areas, such as math, art and culture, and science, are offered to elementary students and a vibrant academic support program is in place for high school students. While a myriad of social, leadership, and developmental programs are geared towards middle school students, there are currently no academic programs for the middle school cohort. As the researchers had learned that promising academic programs are often age-specific, they decided to narrow their scope to academic programming for middle school students only.

However, as many successful programs are subject-specific as well, the researchers desired to contour their study further based on the most pressing academic subject needs of the middle school population at the BGCP-RWC. After speaking informally with a number of staff and students on-site at this BGCP location, the greatest subject need for these students appeared to be math skills. Hence, the researchers finally narrowed their scope to math programming geared for middle school students in Redwood City.

Research Questions

- What are the promising practices for this type of academic programming?
Specifically:
 - What is required for academic programming to be offered on site at a community-based organization such as the BGCP?
 - What are the promising practices for middle school students in this context?
 - What are the promising practices for math programming specifically in this context?
- What would the students and staff at the BGCP's Redwood City location like to see in regards to math programming for middle school students?

In order to effectively address these questions, the researchers first considered the following preliminary questions:

- What is the current state of American students' math performance, specifically among middle school students?
- How are middle school youth different from other age groups, and what are the specific needs for middle school students?

III. Literature Review

Trends in American Math Performance

In 1987, the US Department of Education and its affiliates conducted the Second International Mathematics Study to assess the math performance of American students. The results were discouraging. McKnight and colleagues (1987) report that American students placed only slightly above the international average in computational math and well below the international average in non-computational math. Achievement in algebra was comparable to the international average, but Americans performed in the bottom quartile in geometry. Most significantly, eighth grade American student performance had actually declined since the previous study conducted over two decades prior.

Since this time, the comparative performance of American math students has increased, but only modestly. The Trends in International Mathematics and Science Study of 2003 shows American middle school math students performing above the international average but still lagging behind many of their international peers, especially among developed Asian nations (Gonzales et al., 2004).

In the current educational and political climate, there is a resounding call for increased attention to mathematics in middle school. The No Child Left Behind Act stresses the importance of "appropriate and effective interventions" for middle school students struggling in math (US Dept. of Ed., 2006). As US Secretary of Education Margaret

Spellings has stated, “To compete in the global economy, you must know math. Therefore it is more important than ever that our students receive solid math instruction.”

Middle School Students

While some students struggle academically at all grade levels, researchers stress the importance of the early adolescent years and the transition from elementary to middle school in particular. Many researchers have discovered a marked decline in student performance during this move to middle school, and the magnitude of this decline was found to be predictive of future school failure and dropout (Eccles, et al., 1993). While this decline in performance is exhibited to some degree across socioeconomic, cultural, and racial groups, the effects for disadvantaged and minority youth are especially potent (Gutman & Midgley, 1999).

Researchers have posited a number of hypotheses in order to explain this sudden decline in academic performance. Youth are undergoing significant cognitive and emotional changes stemming from puberty during this timeframe, and these developmental changes may have negative effects on performance. Researchers have shown that early adolescents often show a decline in their interest for school, intrinsic motivation, self-concept, and confidence in their intellectual abilities (Eccles, et al.). Psychological and emotional changes during this time may lead to motivational and self-perceptual declines, which in turn may have a pejorative effect on academic performance.

While cognitive and behavioral changes may explain some of these changing attitudes and subsequent effects on student performance, many researchers place more emphasis on the often dramatically changing social landscape and environment for middle school students, especially disadvantaged ones. Environmental stresses, such as poverty, discrimination, and lack of social resources and supports common to more advantaged neighborhoods, combined with a markedly different school structure from that of elementary school, produce negative effects on motivation and performance (Gutman & Midgley, 1999). Middle schools are often larger, more complex, and more difficult to navigate, and students often receive less emotional support from their teachers (*Ibid*). Some researchers argue that this new environment is a mismatch with the developmental stage preadolescents have entered, otherwise known as a poor “stage-environment fit,” and that providing students with the proper adult relationships, environment, and engaging activities is the key to keeping them motivated and performing up to their capacity (Eccles, et al. 1993).

Role of Staff

Researchers consistently stress the importance of adults in the healthy development of youth. In fact, in “Critical Hours,” Miller observes that, “In many studies, the single most important factor in long-term success is the presence of an adult, whether a relative, teacher, or community member, who provides a consistent nurturing presence in a young person’s life” (2003, p. 21). Rouk highlights research findings that among middle schoolers (6-7-8 grades), “teacher support had the most consistent and substantial

influence on grades” (Rouk, 2000), and at least one study reported a statistically significant link between staff development and effectiveness of services aimed at young people (Huebner, et al., 2003). Continuing to train and professionally develop staff, then, especially staff providing academic services to youth, should be a priority for any youth-serving organization. Researchers also stress the importance of caring and supportive staff in developing strong bonds between staff and youth, thus encouraging youth to participate in activities such as academic programs (Rhodes, 2004). However, the question arises: what are some of the additional beneficial characteristics of staff working in academic programming?

In findings from a study conducted by Public/Private Ventures, the authors argue that, “Group management is one of the most important factors in promoting youth engagement, learning, enjoyment, and regular participation” (Grossman, et al., 2007, p. 3). The authors continue by mentioning some elements of what they consider good group management: 1) setting reasonable ground rules; 2) providing ongoing positive reinforcement through encouragement and praise; 3) being consistent and fair in reinforcing expectations; and 4) remaining firm, but not harsh, when ground rules were broken (Grossman, et al, 2007, p. 3). While these general principles have been shown to be effective, some researchers also recommend additional behavior management training specific to the middle school age group.

Some researchers also believe that math-specific training is crucial to effective math programs held in an after-school setting, especially since research has shown that staff in youth-serving organizations are often more uncomfortable teaching math than other subject areas (Mokros, et al., 2005). Especially as math concepts become more complicated for middle school students, staff should receive training in specific math concepts covered in the middle school grades. However, as extensive additional training for all staff in academic programming may not be feasible, especially when the recommended training is as specific as skills for teaching middle school math, researchers suggest training one staff member who is likely to stay with the organization and having them direct the subsequent programming.

Environment

In after-school programs, both physical and psychological safety are paramount in fostering an environment in which students feel that they have the freedom to learn (McLaughlin, 2000). After-school programs can build on the foundation of a safe environment as they establish an “intentional learning environment” (McLaughlin, 2000, p. 8) and the encouragement of exploration and risk-taking (Darling-Hammond, 2003). These basic steps give students an opportunity to risk asking questions and tackle challenging academic tasks without the fear of being teased or appearing unknowledgeable.

In addition, research has identified the level of family involvement as an important factor in the engagement of students in after-school programs. Briggs-Hale, et al. address the role of family in engaging students in the learning process, noting that involving families

helps “build an environment where parents feel knowledgeable and comfortable to help their children succeed in mathematics” (2003, p. 24). They suggest involving not just youth but their parents as well in the planning of academic programming, and also advocate programs such as “family math night” that allow youth and their parents to participate in math-related activities and that serve to “foster positive attitudes towards mathematics in both parents and children” (p. 24). As well, the presence of peers also engaged in the learning process has been identified as a factor that can positively influence the level of student engagement in an afterschool academic program (Rouk 2003).

Finally, several studies have demonstrated positive effects associated with required attendance at afterschool programs. Huang et al. (2000) and Mahoney et al. (2005) both found that afterschool programs that required attendance (or at least required enrollment in a program in which consistent participation was expected) saw greater gains in academic achievement than drop-in programs and programs that allowed students to attend only sporadically. Furthermore, both drew links between regular attendance at afterschool programs and school day attendance; youth who regularly attended afterschool programs were found to have better subsequent attendance records at school.

Curricula and Engagement in Math

Challenges

Student engagement in math programming is critical, particularly in the afterschool environment when student attendance may not be mandatory and attendance numbers may have serious implications for organizations whose existence depends on student enrollment. However, research has shown that there are many barriers to successful afterschool math programming.

First, researchers point out that afterschool programs must feel significantly different from what students experience during the school day. Afterschool programs should allow students to participate in different activities and learn different skills from what the regular school day allows (Miller, 2003).

Second, sporadic student attendance and the ability of youth to “vote with their feet” in afterschool present challenges both in terms of creating continuity in programming and engaging students so that they will continue to attend (Mokros, Kliman, Freeman, 2005).

Additionally, as noted above, the unique challenges for staff around math programming can make organizations less willing to implement math programming (Mokros, Kliman, Freeman, 2005).

Finally, Briggs-Hale, Judd, Martindill, and Parsley (2003) note that there is an overall lack of research around afterschool math programming. While there is limited information available that addresses math within the afterschool contact, the researchers have attempted to include a wide range of information around best practices and have

drawn information from both the body of math instruction literature and afterschool programming literature.

Promising Practices

While the literature shows that afterschool academic programming should be different from school day programming, nonetheless, alignment with school practices and curricula can be helpful. Research on just how important this alignment is has been inconclusive, however (Miller, 2003). One sample of research on the value of this alignment can be found in the work of Mokros, Kliman, and Freeman, who advocate for alignment in afterschool math programming with Boston's public schools (2005). This includes staff training and development around district curriculum, clear training on homework expectations, and examples of programs that have incorporated this type of training such as Citizen Schools, BELL, and Victory (Mokros, Kliman, Freeman, 2005).

While afterschool academic programming may be less formal than school-day programming, creating an intentional learning environment with clearly defined program goals is beneficial (Mokros et al, 2005; McLaughlin, 2000). Emphasizing goals, progress, and monitoring student outcomes has been shown to be successful for tutoring programs as well (Briggs-Hale et al., 2003).

In terms of actual program structure and curriculum, several researchers have identified project-based learning as a promising form of math academic research and support. Briggs et. al define project-based learning as a "systemic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured around complex, authentic questions and carefully designed projects and tasks" (Briggs et al., 2003, p. 25). Citizen Schools, a middle school afterschool program (grades 6-8) with the goal of "educational enrichment, career exposure, and high school and college preparation" for "educationally at-risk students" has found success with project-based model in terms of attendance, engagement, and academic achievement. (Pearson, Vile, Reisner, 2008). One example of a Citizen Schools Project (called a "WOW"), is a student-created report on winter gardening, featuring information about plants and soil, as well as multiple charts measuring and tracking bulb growth (Citizen Schools, 2001). Additional Citizen Schools projects that address math for middle school students include "Design It!" and "What's on Your Mind?" (Mokros, Kliman, Freeman, 2005). Overall, projects as components of after-school academic programming that have shown potential to enhance youth engagement in the learning process which can translate into increased academic performance (Shumow, 2001; Miller, 2003).

Research on student engagement in math, both in the afterschool and school day context emphasizes the value of cooperative learning groups and giving students opportunities to work together (Rouk, 2000; Briggs-Hale et al., 2003). Additionally, Briggs-Hale et al report that math games can promote student engagement by "leveraging students' natural inclination to play." They should, however, be carefully monitored by a caring adult.

A common, though controversial practice in engaging students in any time of academic

programming is the use of extrinsic awards. This can mean candy, t-shirts, or any other type of prize or incentive for attendance, participation, or performance. Rouk, however cautions that these rewards can shift student perceptions of who is in control and even “turns play into work” (2000).

Researchers also emphasize that student engagement in both math and afterschool programs can be improved by making programs both interactive and relevant. The Citizen Schools model of apprenticeships and project-based learning exemplifies one interactive approach (Pearson, Vile, Reisner, 2008). Additionally, Miller notes that, “Students who are engaged are focused, enthusiastic, and persistent when faced with challenges” (2003, p. 18). Relevance is another tool for fostering student engagement (Rouk, 2003). In addition to creating longer-term programs or projects around the practical applications of math such as finance, this can also mean weaving math into everyday activities. This approach, which the Southwest Educational Development Lab (SEDL) refers to as “Finding Math” can mean “using culturally relevant real-world activities that children already appreciate and enjoy to create teachable moments that help students make connections to mathematics content and skills” (Briggs-Hale, Judd, Martindill, and Parsley, 2003, p. 7). Similarly, afterschool math should use popular activities based on the needs, interests, and culture of students, provide social interaction and physical activities that may involve a kinesthetic aspect of learning math.

One way to ensure that programs are relevant, interactive, and engaging is to give students choice in their afterschool programming (Eccles, et al.; Rouk; Shumow; Miller). In *Community Counts*, McLaughlin emphasizes that “Youth voice and points of view help define youth-centered organizations” (2000, p. 10). This concept can be further extended to specific programs or activities. The use of “math centers” or “small group stations where students work together on activities such as puzzles, problems using manipulatives, and brainteasers” can also be an effective way to allow students to choose what activities to do and increase their engagement (Briggs-Hale, Judd, Martindill, and Parsley, 2003, p. 11).

Finally, the review of literature in this paper did include some commentary on tutoring and homework completion programs, as this seemed especially relevant to the Power Hour program at BGCP. Tutoring in general, when effective, has been shown to improve confidence, grades, completion of homework, and standardized test scores. In particular, math tutoring is useful in improving mathematical learning when it is targeted to individual needs, “high quality, consistent, frequent,” and includes effective tutor training, structured content, progress monitoring, and flexibility to support special needs students (Briggs-Hale et al., 2003, p. 19). However, there is some evidence that homework help and tutoring are not as effective in promoting academic achievement as enrichment programs (Lauer et al., 2003; Miller, 2003).

IV. Qualitative Research Methodology

In addition to the literature review of promising practices and programs in afterschool and math nationwide, the researchers also studied the current practices, interests, and suggestions of current staff and students.

Interview with BGCA Staff

To better understand the perspective of the Boys and Girls Club of America and find out more about math programs being used in Clubhouses around the nation, the researchers interviewed Dr. Erica Stevens, Director of Education Programs at BGCA.

Interviews with Clubhouse Staff

Researchers also interviewed four Clubhouse staff members affiliated with academic programming and/or middle school youth. Staff were selected for interviews based on recommendations of BCGP management and staff availability. Additionally, researchers spoke informally with a number of other staff members.

Observations at Clubhouse

Researchers informally observed at the Redwood City Clubhouse on multiple occasions. Observations included academic programming, game room time, and adolescent/teen programming.

Focus Groups with Middle School Youth

Researchers conducted two focus groups with middle-school-age youth. Each group included eight students between grades six and eight. BCGP program staff selected youth who attended club regularly to participate. Both groups were asked about their involvement at the Clubhouse, attitudes toward math, and ideas for future programming.

V. Findings

Interviews and Focus Groups

Gap in programs for middle school students/importance of same-aged peers in programs

All staff members who we interviewed identified a gap in programming. While in the last year several pre-teen programs have been established, including Torch Club, Money Matters, and GirlTime, these programs are largely oriented towards life skills and leadership. In terms of academics, middle school club members must participate in Power Hour (homework time) along with all other club members. As well, middle schoolers have the option of participating in Successmaker. This is a computer/video-game based literacy and math enrichment program that requires a \$75 fee each year. While staff

members identified this opportunity, in our focus groups the middle schoolers articulated their impression that Successmaker was primarily for younger club members, and that there are “too many little kids” in the program. We also heard from both staff and students that whether or not friends attend BGCP programs is a major reason why students choose to attend or not attend. This was particularly prevalent during middle school, as several staff members identified middle school as a time when many members stop attending the BGCP.

Recognition of importance of math

Though most of the youth who participated in the focus groups did not like math in school, almost all recognized the importance of math in everyday life. It was not difficult for the youth to list the practical uses of math; the applications of math in the real world that they listed ranged from getting a good job and paying rent, bills and taxes to avoid getting cheated to (on the creative end of the spectrum) using a compass. While the staff we interviewed questioned whether or not students were engaged in the learning process and indicated that many students were struggling to keep up in math, they did note that the vast majority of the youth understand the utility of math, and the importance of academic success more broadly. When asked about the possibility of after-school math programming at BGCP, youth responded enthusiastically and had numerous suggestions.

Programs must be fun and engaging, not replicating the school day

A number of staff communicated a strong commitment to not replicating the school day, as youth arrive at the Boys and Girls Club following a full day of school. The prevailing strategy adopted by staff with regards to academic programming was well articulated by one staff member who said, “fun and well-planned activities engage youth in the learning process.” Two staff members also pointed out that when students feel that their input has shaped the curriculum, they are more engaged in the programming.

When we asked about a time that they had enjoyed math at school, the youth participating in the focus groups had no shortage of examples. Nearly all youth gave examples of interactive activities, ranging from “Mathnet” (an activity that involved teams solving mysteries using math) to building ramps and then measuring the speed of cars to using gummy worms and other candy as counting and multiplication manipulatives. Staff consistently recognized that interactive and project-based activities were received with much more enthusiasm on the part of the students than were lectures and more didactic teaching methods. One staff member noted that “eyes glaze over” during lecture-based sessions, but “they [the students] gather like bees for hands-on activities.”

Tutoring and homework help

In addition to interactive games and projects, several students in the focus groups also pointed out that they most liked math when the teacher was able to clearly explain the subject matter. One student recalled a math teacher who “didn’t make us feel dumb when we asked questions.” Other students communicated appreciation for teachers who stayed

after school to help them with homework and “made it [math] easy to understand.” Through student comments, it was apparent that clear explanation and individual attention was well received by students, and identified by them as a factor contributing to their engagement. When asked to brainstorm about possible math programs, many students mentioned that tutoring and homework help would be helpful. In particular, two mentioned that having a quiet room with tutors would be especially beneficial. While some youth communicated that PowerHour was helpful in creating a time for them to focus on homework, others said that PowerHour was “boring.” There emerged a clear sense that while PowerHour may be helpful in encouraging homework completion, it was not engaging students in the learning process.

VI. Key Themes

The findings from the Boys and Girls Club interviews and focus groups along with the literature review have aligned around the following four themes:

Middle School Math as Critical Opportunity

Staff, students, and academic publications agree that math is essential for success in today's world – and too often in our nation, students are not performing where they should be in math. Additionally, there is consensus around the idea of adolescence, and particularly the middle school years as a critical time to make sure that all students are on a path toward high school graduation. Furthermore, the challenges of adolescence are often amplified for students in poverty, often making it even more difficult for them to achieve academic success.

Staff role

Another trend the researchers found in the literature and echoed in the responses from students and staff members at the BGCP is the importance of staff. Caring adults can dramatically impact the lives of youth both in terms of relationship building and the actual skills they share. During focus groups, students talked about math teachers who had helped them or made math engaging with great appreciation and enthusiasm. Additionally, the articles the researchers reviewed emphasized that math programming may present specific challenges and needs for additional staff training and support.

Learning Environment

The environment in which students learn makes a difference. Research has shown that the environment must feel safe for students to take risks and make mistakes. Informal observations of the Clubhouse showed an environment where youth were happy, relaxed, and also aware of the expectations for their behavior in the Clubhouse. When asked about setting norms for the focus groups, youth emphasized respect, listening, and participation. Additionally, students already perceive the Clubhouse as “fun” and a place where they

have friends. This environment is a solid foundation even for a program on a subject such as math, which several students mentioned makes them uncomfortable.

Engagement in math

Student engagement was the key theme mentioned most both in the literature the researchers reviewed and in comments from staff and students. Student engagement can mean providing students with choice and soliciting their input, making activities and projects relevant and challenging, or considering the use of extrinsic rewards. (While the literature was cautious about extrinsic rewards, several students in each group happily noted examples of math activities involving gummy bears or chocolate.) Perhaps most importantly, even if the goals of a math program afterschool and during the school day are the same, the programs should look quite different.

VII. Discussion/Opportunities for Growth

Implement middle-school-specific academic programs, especially in math

As the BGCP-RWC is striving to achieve the Boys and Girls Clubs of America's goal of promoting high school graduation, and as the BGCP-RWC is providing elementary and high school students with targeted academic support, the lack of academic programming for middle school students is a definite opportunity for growth. Without additional academic support, students may be at increased risk for disengaging from their academics before they can reach high school. While academic programming for all subjects is important, the researchers recommend placing a priority on math as many students begin to struggle with math during the middle school years, and as strong math performance is crucial to students' overall academic success through high school.

Continue to develop safe and intentional learning environment

Students who spoke with the researchers repeatedly stressed the safety and comfort they feel in the BGCP-RWC and the learning that occurs within the club. Therefore, the researchers do not believe that changing the environment is necessary, but rather extending the pre-existing climate of safety and learning into academic programs. However, the researchers believe that placing increased emphasis on intentional, targeted, and guided learning would contribute to the academic success of middle school students.

Provide training and development opportunities for staff around academic (math) programs

The literature on the subject indicates that properly trained staff members are a necessary component of effective academic programs in an afterschool context. For academic programs, staff should receive additional training on effectively managing groups and creating an intentional learning environment for students. Additionally, as research finds

that staff are often especially uncomfortable instructing students in math, math-specific and even middle school math-specific training would contribute to the success of a math program for middle school students.

As thoroughly training all staff members may not be practical, however, the researchers recommend providing extensive training for one specific staff member who is expected to stay with the organization and work in academic programming.

Consider promising math afterschool practices including project-based learning, games, and group work

BGCP RWC may wish to implement middle school math programming focused on support and enrichment in addition to the current programs for homework support. Research emphasizes that for middle school students, opportunities for collaboration and group work can be effective in supporting student achievement and engagement. Additionally, students and research articles noted that games and projects can be particularly engaging supports for this age group. Project-based programs such as those used by Citizen Schools provide one possible example.

Opportunities for further research

The understanding of the research team is that there is a Center for a New Generation (CNG) program running out of Hoover School, located next to the Redwood City Clubhouse. While no staff mentioned the CNG program, several students did mention that some of their peers attended CNG, although it was not clear whether or not all of the students had the option of attending CNG programs. As CNG also provides after-school academic programming, the research teams suggests reviewing what academic programming is available to students through CNG at Hoover, and exploring the possibility of collaborating with CNG in both offerings and sharing resources such as staff training opportunities and curricula.

The research team limited the scope of this project to examining opportunities in math programming based on initial exploratory research and conversations with BGCP staff. While students did indicate that they are struggling in math (a finding also articulated in staff interviews), a number of staff mentioned that students struggle in other areas, such as literacy/reading and science. The research team believes that math is a great place to start if the BGCP is interested in expanding academic offerings for middle school aged youth, but it is by no means the only avenue to explore.

VIII. Conclusion

The Boys and Girls Club of the Peninsula's Redwood City Clubhouse provides youth with an opportunity to engage with peers and caring staff members in a wide range of opportunities for learning and fun. With the national organization's increasing awareness

of its ability to narrow the academic achievement gap for youth in under-resourced communities, the BGCP is well-positioned to explore new academic programming that engages, challenges, and supports youth. Specifically, given the unique developmental needs of middle school age youth and the growing disconnect between the importance of math in today's careers and American students' performance in math, the researchers suggest that the BGCP consider new programs to meet these needs.

Appendix

Appendix 1: Sources

- Apprentices from the R.G. Shaw Citizen Schools Program (Fall, 2001). A Guide to Winter Gardening. Citizen Schools website. Retrieved 12.1.08 from www.citizenschools.org/uploads/wintergardening.pdf.
- Black, A. R., Doolittle, F., Zhu, P., Unterman, R., Grossman, J. B., & Warner, E. (2008). The evaluation of enhanced academic instruction in after-school programs: findings after the first year of implementation. US Department of Education/National Center for Education Evaluation and Regional Assistance/Institute for Education Sciences.
- Briggs-Hale, C., Judd, A., Martindill, H., and Parsley, D. (2003). Afterschool mathematics practices: a review of supporting literature. Developed by the Mid-Continent Research for Education and Learning for the National Partnership for Quality Afterschool Learning with SEDL.
- Darling-Hammond, L., Strobel, K., & Martin, D. (2003). Expectations for success: motivation and learning." *The Learning Classroom: Theory into Practice*. Stanford University School of Education.
- Eccles, J. E., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., & Flanagan, C., et al. (1993). Development during adolescence: the impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist*; Vol. 48, No. 2, 90-101.
- Gonzales, P., Guzmán, J. C., Partelow, L., Pahlke, E., Jocelyn, L., & Katsberg, D. et al. (2004). Highlights from the trends in international mathematics and science study (TIMSS) 2003. National Center for Education Statistics: US Department of Education.
- Grossman, J., Campbell, M. & Raley, B. (2007). Quality time after school: what instructors can do to enhance learning. Public/Private Ventures, April 2007.
- Gutman, L. M. & Midgley, C. (1999). The role of protective factors in supporting the academic achievement of poor African-American students during the middle school transition. *Journal of Youth and Adolescence*, Vol. 29, No. 2, 2000.
- Huang, D, Gribbons, B., Sung Kim, K., Lee, C., & Baker, E. L. (2000). A decade of results: the impact of LA's BEST after school enrichment program on subsequent

- student achievement and performance. UCLA Center for the Study of Evaluation.
- Huebner, A. J., Walker, J. A., & McFarland, M. (2003). Staff development for the youth development professionalism: a critical framework for understanding the work. *Youth & Society, 2003; 35; 204*. Retrieved from <http://yas.sagepub.com/cgi/content/abstract/35/2/204> on November 8, 2008.
- Kane, T. J. (2004). The impact of after-school programs: interpreting the results of four recent evaluations." University of California, Los Angeles.
- Lauer, P., Akiba, M., Wilkerson, S., Apthorp, H. S., Snow, D., & Martin-Glenn, M. (2003). The effectiveness of out-of-school-time: strategies in assisting low-achieving students in reading and mathematics: a research synthesis. Regional Educational Laboratory (Contract #ED-01-CO-0006). Prepared for Institute of Education Sciences Department of Education Washington, D.C.
- McKnight, C. C., Crosswhite, F. J., Dossey, J. A., Kifer, E., Swafford, J. O., & Travers, K. J. et al. (1987). The underachieving curriculum: assessing U.S. school mathematics from an international perspective - a national report on the second international mathematics study. US Department of Education. Washington D.C.
- McLaughlin, M. (2000). Community counts: how youth organizations matter for youth development. Public Education Network. Washington, D.C.
- Mahoney, J. L., Lord, H. & Carryl, E. (2005). An ecological analysis of after-school program participation and the development of academic performance and motivational attributes for disadvantaged children. *Child Development; Vol. 76, No. 4, July/August 2005, 811-825*.
- Miller, B. M. (2003). Critical hours: afterschool programs and educational success. Nellie Mae Education Foundation.
- Mokros, J., Kliman, M., Freeman, H. (2005). Time to enhance math in after-school. Cambridge, MA: TERC. Retrieved October 16, 2008 from <http://www2.terc.edu/UPLOADED/DOCUMENTS/TimeEnhanceMath.pdf>.
- National Mathematics Advisory Panel (2008). Foundations for success: the final report of the national mathematics advisory panel. US Department of Education.
- Pearson, L., Vile, J. and Reisner, E. (2008). Establishing a foundation for progress toward high school graduation: findings from phase V of the Citizen Schools evaluation. Policy Studies Associates, Inc.
- Rhodes, J. E. (2004). The critical ingredient: caring youth-staff relationships in after-school settings. *New Directions for Youth Development, Vol. 2004, No. 101, 145-161*.

Rouk, Ullik (2001). Student engagement in learning and how it affects academic performance. The After School Corporation.

Shumow, L (November 2001). Academic effects of after-school programs. *ERIC Digest* (EDO-PS-01-8).

US Department of Education (2006). Math now. No Child Left Behind Act.

Vandell, D. L., Reisner, E. R., Brown, B. B., Pierce, K. M., Dadisman, K., & Pechman, E. M. (2004). The study of promising after-school programs: descriptive report of the promising programs. Wisconsin Center for Education Research.

Appendix 2: Research Protocols

Clubhouse Staff Interview

Four interviews; completed 10/10/08, 10/29/08, 11/04/08, and 11/07/08.

1. How long have you been working at BGCP?
2. Can you describe a typical afterschool academic session, from when the students arrive to when they leave/switch to a different activity/program?
3. What are your goals for your program? What goals have others shared with you? What are they?
4. Can you tell me a little bit about each of the different programs that you use (e.g. Successmaker, etc.) For each, what are the benefits, drawbacks?
5. Did you inherit these programs when you took the job, or have they been implemented since you arrived?
6. If you were here for the implementation, can you tell me about how the program was chosen, and how the implementation process went?
7. Have you worked with other afterschool programs, either at BGCP or in another organization, that you thought were successful? If so, what qualities did the program(s) have?
8. How often do students attend?
9. What do you think motivates students to attend?
10. From your perspective, are the students often engaged in the learning process? Sometimes? Never?
11. Does this engagement depend on any factors that you can identify for us?
12. Could you tell us about the age of students who attend? (Possible follow-up about when students stop attending.)
13. Why do you think students choose not to attend?
14. How many volunteers work with the academic programs each day?
15. What are the challenges of academic programs here?
16. What is working well with academic programming?
17. Can you tell me about how your students are doing in math specifically?
18. What are your thoughts about afterschool math programming?
19. If you could design your ideal academic program for the middle school students, what would it consist of? Are there certain qualities it would involve? Certain goals it would meet that the current programming is not currently meeting?

Interview with BGCA Central Office Staff Member

Completed 10/09/08.

1. Does BCGA recommend any specific programs to local BGC's?
2. How do the local BGC's choose their academic programs?
3. If BGCA recommends programs, where do they get those programs from?
Outside sources or in-house?
4. Can you recommend any databases or resources BGCA uses that have research on academic programs?
5. Can you recommend any specific math programs for middle school age kids?
6. What are BGCA's goals in terms of academic programs? Are these goals shared by the local BGC's?
7. How do you measure the success of these programs?

Focus Groups

Participants were middle school youth who are active members at BGCP-RWC; completed 10/30/08 and 11/14/08.

Icebreaker: Name, how old or grade, favorite subject in school and favorite thing to do outside school

Explain Purpose

Establish group norms

Current Participation

- How often do you come to the Clubhouse? Why do you come?
- How often did you participate in academic programs? (By academic programs, we mean things like SuccessMaker, or other math, reading, science, technology, etc programs)
- Tell me more about these academic programs.
- What makes you go or not go?
- If you have friends who don't come to the education programs like these, why do you think they don't come?

Future Programs

- Do you think it would be helpful to have help with math at the Boys and Girls Club? If yes - what should it be like?
- Can you think of a time when you liked something you did in math class in school? What did you do? (If you didn't actually like it, try to think of a time when it was "OK")

Appendix 3: Core Reading Summaries

Core Reading 1

Rouk, Ullik. (2000) *Student Engagement in Learning and How it Affects Academic Performance*.

The After School Corporation.

***Student Engagement in Learning and How it Affects Academic Performance* examines recent research on student engagement in learning. After exploring general research surrounding factors related to student engagement in the learning process, the author focuses in on “out-of-school influences on student engagement” and on resilience research that addresses “factors that mitigate against adversity in students’ lives” (13).**

Issue or problem addressed

Why are some students engaged in the learning process (both in and out of school) while others are not? What are the factors that influence levels of engagement?

Research questions

This article examined a number of different research studies that focused on particular aspects of student engagement. These studies are generally categorized as follows

- Studies exploring individual influences on engagement in the learning process
- Studies exploring classroom influences on engagement in the learning process
- Studies exploring extracurricular/out-of-school influences on engagement in the learning process
- Resilience research as related to academic performance

Key points/findings

The author cited research studies that shed light on a number of identified factors within each of the above categories.

Studies exploring individual influences on engagement in the learning process

- Competence: “When [students] believe they can complete a task successfully, they are more likely to choose to do the task...persist at it and complete it” (2). Encouraging efficacy or sense of effectiveness, in youth leads to improvements in academic performance.
- Autonomy: As researchers have “confirmed a positive association between autonomy and academic achievement” (2), it is important for youth to feel that they have control over which activities they participate in.
- Intrinsic v. extrinsic motivation: Here researchers have shown that “giving students extrinsic rewards can change their perception of who is in control of an activity” (3) and thus turns “play into work” (3).
- Interest: Student interest in a subject or topic has (not surprisingly) been shown to increase engagement levels. Characteristics of activities that increase student interest include “personal relevance, novelty, an appropriate activity level, and comprehensibility” (4).

- Purpose of the task: In the absence of student interest, youth will engage in things that they feel have other purposes (e.g. demonstrating their ability, opening doors to future opportunities/goals).

Studies exploring classroom influences on engagement in the learning process

- Teacher behavior: The author cites a number of studies that emphasize a student's relationship with their teacher as a significant factor in student engagement. Teacher behaviors that are positively associated with student engagement include: clear classroom structure; high expectations; high levels of interaction; focus during learning time; and involving students in the process of determining goals and tasks. Though the supportiveness of teachers was not as strong of a predictor of academic success among older students, research did show that among middle schoolers (6-7-8 grades), "teacher support had the most consistent and substantial influence on grades" (8). Good detail here
- Influence of peers: The importance of peer relationships was highlighted, as research cited has demonstrated that while students whose peers are supportive of learning and also engaged in the learning process are more easily able to engage themselves, "anti-achievement" (10) peer groups can negatively influence a student's engagement level. The author also cites a number of studies that show positive association between cooperative learning groups (particularly in mathematics) and high levels of student engagement.

Studies exploring extracurricular/out-of-school influences on engagement in the learning process

- Exploring common out-of-school activities (including time at CBOs, hanging out with peers, time spent alone, time with adults; religious activities; work), researchers found that while academic extra-curricular activities, other structured activities (including religious involvement), and time spent with adults were positively associated with student engagement AND academic achievement, hanging out with peers and time spent alone were negatively associated with increased engagement and achievement levels. One researcher highlights the importance of after-school programs being tailored to students' interests.

Resilience research as related to academic performance

- School influences: Beyond the influence of curriculum, research has shown that classroom practices of teachers (and in particular setting high standards and having high expectations for at-risk students) are the strongest identified influence on student resilience within the school.
- Community influences: The author argues, based on research, that a "communities that have well-developed and integrated social organizations have a front-line defense against the high-risk circumstances in which many young people find themselves" (14). The role of adults and the importance of involving youth in leadership of community programs are emphasized.

Implications

- It is important to have an ecological perspective of student engagement – organizations cannot simply look to individual factors in engagement, but also to social factors, including relationships with peers, family, community organizations, and (perhaps most importantly) teachers

- Once again, the research cited in this article points to the importance of stable adult relationships in encouraging student engagement.
- As the author refers to research that shows that the influence of individual factors in engagement decrease in importance during the middle school years (5), it is essential to look at school and community based factors in promoting student engagement.

Core Reading 2

Huang, D. et al. (2000). *The Impact of LA's BEST After School Enrichment Program on Subsequent Student Achievement and Performance*. UCLA Center for the Study of Evaluation.

Program

- LA's BEST is a district-wide voluntary after-school program that serves primarily disadvantaged Latino students and provides them with a safe environment, homework help, and general academic enrichment.
- While attendance is voluntary, if students do choose to come they then have to enroll in the program (as opposed to just drop-in).
- Interesting to note that the program was not designed primarily to increase test scores or academic performance, but rather to provide a safe after-school environment for students, recreational activities, interpersonal and social skills development, and other non-academic goals.

Problem

- Do LA's BEST programs have a significant impact on academic achievement?

Method

- Longitudinal study of students enrolled in LA's BEST programs for multiple years. Study followed students who were in second through fifth grade during the 1993-94 school year, through the 1997-98 year. Looked at student test scores (Comprehensive Test of Basic Skills and Stanford-9) to assess academic achievement; also looked at absenteeism and the rate at which students were redesignated as English proficient. Participants were compared to non-participants in the same schools.

Findings

- For students with long-term participation (4 years), a follow-up analysis showed that previous participation was positively correlated with higher test scores in mathematics, reading, and language arts.
- Participation was related to better attendance in school. However, a follow-up study showed that the impact of participation on attendance slowed when fifth graders went to the sixth and seventh grades, and there was no correlation between participation in the program and attendance in eighth and ninth grades.
- (Path-analysis) Participation in the program led to better attendance, which in turn indirectly led to better achievement results. Program may not have directly impacted scores.
- For students that only participated for one year, program proved ineffective at having a positive impact on student attendance or achievement.
- Participation was positively correlated with redesignation as English proficient.

Drawbacks

- Study focused on the after-school program as a whole, so no way to identify the impact of any specific program (homework help, other academic program, enrichment program, etc.)

Implications

- Because high student participation is positively correlated with attendance and test scores, programs need to focus on encouraging regular and long-term student participation. Even if programs themselves don't directly increase test scores, they can do so indirectly by increasing student attendance in school.

Core Reading 3

Miller, Beth M. (2003) *Critical Hours: Afterschool Programs and Educational Success*.
Nellie
Mae Education Foundation.

***Critical Hours* examines hundreds of research publications to address the issue of afterschool programming for adolescents between the ages of 10 and 14. The author looks at how afterschool programs can support this age group by fostering healthy development and more specifically, academic success.**

Profile of Adolescents Today

- Adolescence is a critical time for identity development
- Adolescents face many levels of change from physical to social/emotional to structural changes in school environment
- Youth in this age group face major risks
- All of these challenges are increased for youth growing up in poverty
- In families, increased work hours, single-parent households, and welfare reform have led to less adult supervision at home
- Today's economy requires higher level academic skills than ever before
- The educational context of our nation is dominated by a need to compete globally and emphasis on accountability and testing
- The achievement gap between poor, often minority students and their wealthier peers is widened by access or lack of access to enriching structured opportunities outside of school

Factors that Promote Engagement in Learning/School: Afterschool programs are “uniquely poised” to do all of these and “attack the critical ‘prerequisite’ to academic achievement: a desire to learn.”

- Student engagement normally drops in middle school
- Most middle school structures fail to address or conflict with student needs
- “Resiliency research” identifies the following areas as critical in describing engagement in learning: (1) a sense of oneself as a competent learner, (2) parent involvement, (3) emotional attachment to caring adults, (4) exposure to positive peer influences

Types of Afterschool Programs: Access to opportunities is not equal due to options available in a neighborhood, fees, transportation, and other boundaries

- School Age Care – provides child care for parents, supports children's needs
- Positive Youth Development – approach to prepare youth for adulthood
- Extended Learning – attempts to increase student performance
- Extracurricular Activities – structured voluntary activities, often school based, may have fees

Self-care versus Afterschool Programs: Research shows that adolescents in self-care are at-risk in many ways and adolescents in high-quality activities tend to have higher academic outcomes.

Afterschool Program Outcomes: Some afterschool programs may directly affect student outcomes, but many more may indirectly affect academic achievement in the following ways: relationship-building with adults, sense of belonging with peer group, gaining new skills and knowledge, take part in decision making and problem solving, increased academic confidence, increased involvement by families. There is also research showing reduced negative behaviors and increased academic performance. Again, we see the greatest benefits for the students in the greatest need (particularly from high poverty neighborhoods).

Middle School Programs

- Often programs are targeted for elementary or high school students
- More focused programs are needed for this age group
- Early outcomes from 21st Century Programs are positive
- North Carolina SOS program saw increased passing rates on tests and courses for students
- Beacon Centers in SF – Participation was correlated with higher test scores
- In the “resiliency framework,” afterschool participants were found to have an increased knowledge of local resources, belief in caring adult(s), sense of acceptance, sense of importance of staying out of trouble, and model for respect and appropriate behavior

Some Best Practices in Existing Programs:

- **Active hands-on learning** that is structured and challenging
- **Project-based learning** through authentic tasks and well-trained staff supervision
- **Adventure learning** (e.g. Outward Bound) to promote confidence and leadership
- **Service learning** or hands-on community participation that allows students to build new skills and reflect. *This has been shown to be especially effective with middle school students.*
- **Mentoring/Tutoring** (e.g. Big Brothers, Big Sisters and Citizen Schools) can significantly increase motivation and academic achievement. It is important to note that tutor training matters.
- **Arts Education** has been particularly successful at engaging students
- **Homework** support shows mixed results on benefits for middle school students. HW programs should take place after a break from school time.
- **School/afterschool program interaction** matters. Afterschool should be distinct from school, but collaboration can support both schools and afterschool programs. Having some staff overlap may also be beneficial.
- **Literacy development** is an important part of youth development. Reading outside of school for pleasure is correlated with success in school.

Key Findings on Program Strategies: Programs for young adolescents should be different from elementary and high school programs. Overall, the most important factors

are: caring competent staff, safe environment where children can take risks, and “the 3 Vs – voice, vote, and voluntary activities.” How often students attend also matters and many organizations struggle to balance engaging students so they will attend and providing rich academic programs.